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**DEPARTMENT OF COMMERCE**

**National Institute of Standards and Technology**

**Notice of Public Workshop on Quantum Information Science and the Needs of U.S. Industry**

**AGENCY:** National Institute of Standards and Technology (NIST), Commerce.

**ACTION:** Notice of Public Workshop

**SUMMARY:** The National Institute of Standards and Technology announces a workshop on Quantum Information Science and the Needs of U.S. Industry, to be held on Friday, April 10, 2015. NIST is holding this workshop on behalf of the Interagency Working Group on Quantum Information Science of the National Science and Technology Council (NSTC) Committee on Science (CoS) Subcommittee on Physical Sciences (PSSC). The purpose of the workshop is to solicit input from stakeholders about the broader needs of the industrial community in the area of quantum information science (QIS). Topics to be discussed include opportunities for research and development, emerging market areas, barriers to near-term and future applications, and workforce needs. Information gathered

at this workshop will be used in the development and coordination of U. S. Government policies, programs, and budgets to advance U.S. competitiveness in QIS.

**DATES:** The Workshop on Quantum Information Science and the Needs of Industry will be held on Friday, April 10, 2015 from 9 a.m. to 5 p.m. Eastern Time. Attendees must register by 5:00 PM Eastern Time on April 3, 2015.

**ADDRESSES:** The workshop will be held at NIST, 100 Bureau Dr., Gaithersburg, MD, 20899. Please note admittance instructions under the SUPPLEMENTARY INFORMATION section of this notice.

**FOR FURTHER INFORMATION CONTACT:** For further information contact Gail Newrock, Carl Williams, or Claire Cramer by email at [qisiwg@nist.gov](mailto:qisiwg@nist.gov), or Gail Newrock by phone at (301) 975-3200. To register, go to: <http://www.nist.gov/pml/div684/quantum-information-science-innovation-and-the-path-forward.cfm>. Additional information about the workshop will be available at this web address as the workshop approaches.

**SUPPLEMENTARY INFORMATION:** Twenty years of research and development work in QIS is producing the first niche applications, and there is an increasing level of international activity in the field. The Interagency Working Group in QIS was chartered in October 2014 to develop and coordinate policies, programs, and budgets to take advantage of recent progress in this area and position the United States as a leader in the

international research community. The Interagency Working Group includes participants from the Departments of Commerce, Defense, and Energy; the Office of the Director of National Intelligence; and the National Science Foundation. The purpose of the workshop on Quantum Information Science and the Needs of U.S. Industry is to solicit input from stakeholders about the broader needs of the industrial community in the area of quantum information science (QIS). Topics to be discussed include opportunities for research and development, emerging market areas, barriers to near-term and future applications, and workforce needs. Information gathered at this workshop will be used in the development and coordination of U. S. Government policies, programs, and budgets to advance U.S. competitiveness in QIS.

This workshop will focus on the needs of industry in the following areas:

#### 1) Opportunities

Quantum information science includes, for example, quantum computing and processing, quantum algorithms and programming languages, quantum communications, quantum sensors, quantum devices, single photon sources, and detectors. What areas of pre-competitive QIS research and development appear most promising? What areas should be the highest priorities for Federal investment? What are the emerging frontiers? What methods of monitoring new developments are most effective?

#### 2) Market Areas and Applications

The 2008 “A Federal Vision for Quantum Information Science”<sup>1</sup> identified exciting new possibilities for QIS impact, including mineral exploration, medical imaging, and quantum computing. Now, six years later, what market areas are well-positioned to benefit from new developments in QIS?

### 3) Barriers

Funding levels and mechanisms, technology, dissemination of information, and technology transfer are some of the potential barriers to adoption of QIS technology.

What are the greatest barriers to advancing important near-term and future applications of QIS and what should be done to address these barriers?

### 4) Workforce Needs

Addressing opportunities in QIS and barriers to applications requires a workforce spanning many disciplines, ranging from computer science and information theory to atomic scale manipulation of materials, and possessing a range of knowledge and skills. What knowledge and skills are most important for a workforce capable of addressing the opportunities and barriers? In what areas is the current workforce strong, and in what areas is it weak? What are the best mechanisms for equipping workers with the needed knowledge and skills?

The workshop will include invited presentations by leading experts from academia, industry, and government and time for group discussion.

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<sup>1</sup> <http://www.nist.gov/pml/div684/upload/FederalVisionQIS.pdf>

There is no cost for participating in the workshop. No proprietary information will be accepted, presented or discussed as part of the workshop, and all information accepted, presented or discussed at the workshop will be in the public domain.

WORKSHOP REGISTRATION: All workshop participants must pre-register at the following web address to be admitted: <http://www.nist.gov/pml/div684/quantum-information-science-innovation-and-the-path-forward.cfm>. Anyone wishing to attend this meeting must register by 5 PM Eastern Time on April 3, 2015, in order to attend. Also, please note that under the REAL ID Act of 2005 (P.L. 109-13), federal agencies, including NIST, can only accept a state-issued driver's license or identification card for access to federal facilities if issued by states that are REAL ID compliant or have an extension. NIST also currently accepts other forms of federal-issued identification in lieu of a state-issued driver's license. For detailed information please contact Gail Newrock at (301) 975-3200 or visit: [http://www.nist.gov/public\\_affairs/visitor/](http://www.nist.gov/public_affairs/visitor/).

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